

## WHAT IS CLAIMED IS:

1. A self-cleaning fluid dispenser, comprising:

5 a. a housing defining an internal chamber bounded by an interior surface within said housing, said housing comprising:

(1) an inlet for receiving a fluid product into said housing and being in fluid communication with said internal chamber, and

10 (2) a discharge port through which fluid product may exit said housing, said discharge port being in fluid communication with said internal chamber;

b. a valving rod disposed in said housing and being movable within said internal chamber between an open position, in which fluid product may flow through said internal chamber and exit said housing via said discharge port, and a closed position, in which fluid product is  
—15 substantially prevented from flowing through said internal chamber, said valving rod comprising:

(1) a central bore,

(2) at least one inlet for receiving a cleaning fluid, said inlet being in fluid communication with said bore, and

20 (3) one or more outlet ports in fluid communication with said bore, said outlet ports being capable of directing cleaning fluid radially outwards from said bore and against one or more select portions of the interior surface bounding said internal chamber in order to facilitate the removal of at least a portion of any fluid  
25 product or derivatives thereof that may be in adherence with said interior surface; and

c. a delivery system adapted to supply a cleaning fluid comprising a solvent and a gas to said valving rod inlet.

2. The fluid dispenser of claim 1, wherein said delivery system supplies the cleaning fluid to said valving rod at a pressure ranging from about 0.5 to about 10 psi.

5 3. The fluid dispenser of claim 2, wherein said delivery system further includes

means for detecting the pressure within said delivery system; and  
means for controlling said delivery system based at least in part on the detected pressure.

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4. The fluid dispenser of claim 1, wherein said delivery system includes means for mixing the solvent and gas together.

5. The fluid dispenser of claim 4, wherein said delivery system  
-15 disperses the solvent as a suspension in the gas.

6. The fluid dispenser of claim 4, wherein the solvent and gas are mixed at a gas:solvent ratio ranging from about 50:1 to about 400:1.

20 7. The fluid dispenser of claim 1, wherein  
said discharge port has an interior surface that defines part of said internal chamber of said housing; and  
said valving rod is adapted to direct cleaning fluid against said interior surface of said discharge port when said valving rod is in said  
25 closed position.

8. The fluid dispenser of claim 1, wherein said housing further comprises an internal reservoir in which solvent may be contained, said

internal reservoir being in fluid communication with said at least one inlet into said central bore of said valving rod.

9. The fluid dispenser of claim 8, wherein at least a portion of said  
5 valving rod is movable through said internal reservoir.

10. The fluid dispenser of claim 8, wherein  
said housing has at least one inlet in fluid communication with said  
internal reservoir; and  
10 said delivery system supplies cleaning fluid to said internal reservoir  
via said at least one inlet in said housing.

11. An apparatus for dispensing fluid into flexible containers,  
comprising:  
15 a. a mechanism that conveys a web of film along a  
predetermined path of travel, said film web comprising two juxtaposed  
plies of plastic film that define one or more partially-formed flexible  
containers;  
b. a dispenser through which a fluid product may flow in  
20 predetermined amounts, said dispenser positioned adjacent the travel  
path of the film web such that said dispenser can dispense fluid product  
into the containers, said dispenser comprising:  
(1) a housing defining an internal chamber bounded by an  
interior surface within said housing, said housing comprising:  
25 (a) an inlet for receiving a fluid product into said  
housing and being in fluid communication with said internal  
chamber, and

(b) a discharge port through which fluid product may exit said housing, said discharge port being in fluid communication with said internal chamber;

5 (2) a valving rod disposed in said housing and being movable within said internal chamber between an open position, in which fluid product may flow through said internal chamber and exit said housing via said discharge port, and a closed position, in which fluid product is substantially prevented from flowing through said internal chamber, said valving rod comprising

10 (a) a central bore,

(b) at least one inlet for receiving a cleaning fluid, said inlet being in fluid communication with said bore, and

15 — (c) one or more outlet ports in fluid communication with said bore, said outlet ports being capable of directing cleaning fluid radially outwards from said bore and against one or more select portions of the interior surface bounding said internal chamber to facilitate the removal of at least a portion of any fluid product or derivatives thereof that may be in adherence with said interior surface; and

20 (3) a delivery system adapted to supply a cleaning fluid comprising a solvent and a gas to said valving rod inlet;

and

c. a device for sealing the plies of plastic film together to enclose the fluid product within the containers.

25 12. The apparatus of claim 11, wherein said delivery system supplies the cleaning fluid to said valving rod at a pressure ranging from about 0.5 to about 10 psi.

13. The apparatus of claim 12, wherein said delivery system further includes

means for detecting the pressure within said delivery system; and  
means for controlling said delivery system based at least in part on  
the detected pressure.

14. The apparatus of claim 11, wherein said delivery system includes means for mixing the solvent and gas together.

15. The apparatus of claim 14, wherein said delivery system disperses the solvent as a suspension in the gas.

16. The apparatus of claim 14, wherein the solvent and gas are mixed at a gas:solvent ratio ranging from about 50:1 to about 400:1.

17. The apparatus of claim 11, wherein  
said discharge port of said dispenser has an interior surface that  
defines part of said internal chamber of said housing; and  
said valving rod is adapted to direct cleaning fluid against said  
interior surface of said discharge port when said valving rod is in said  
closed position.

18. The apparatus of claim 11, wherein said housing of said dispenser further comprises an internal reservoir in which solvent may be contained, said internal reservoir being in fluid communication with said at least one inlet into said central bore of said valving rod.

19. The apparatus of claim 18, wherein at least a portion of said valving rod is movable through said internal reservoir.

20. The apparatus of claim 18, wherein  
said housing of said dispenser has at least one inlet in fluid  
communication with said internal reservoir; and  
5 said delivery system supplies cleaning fluid to said internal reservoir  
via said at least one inlet in said housing.
21. The apparatus of claim 11, wherein:  
said housing inlet in fluid communication with said internal  
10 chamber comprises a first inlet in fluid communication with a first fluid  
product comprising one or more polyols;  
said housing comprises a second inlet in fluid communication with  
said internal chamber and with a second fluid product comprising one or  
more isocyanates; and  
15. when said valving-rod is in said open position, the polyols and  
isocyanates are mixed in said internal chamber and dispensed into the  
partially-formed flexible container.
22. The apparatus of claim 21, wherein said solvent is selected from  
20 glycols, ethers, and mixtures of glycols and ethers.